

CLAIMS

1. An optical device comprising:

an optical element formed by using a plurality
of pillar-shaped members arranged periodically and a
5 pair of support members arranged perpendicularly
relative to the direction of arrangement of the
pillar-shaped members so as to sandwich the pillar-
shaped members, said optical element showing a
periodic structure of periodic distribution of
10 refractive index; and

means for applying force to the pillar-shaped
members by way of the support members in a direction
perpendicular to the direction of arrangement of the
pillar-shaped members.

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2. The optical device according to claim 1,
wherein

the force applied to the pillar-shaped members
in a direction perpendicular to the direction of
20 arrangement changes not only the height but also the
diameter of said pillar-shaped members.

3. The optical device according to claim 1,
wherein said support members are made of a material
25 having a rigidity greater than said pillar-shaped
members.

4. The optical device according to claim 1,
wherein the periodic structure does not change its
period when said pillar-shaped members are deformed.

5 5. The optical device according to claim 1,
wherein
at least one of said pair of support members is
a piezoelectric element.

10 6. The optical device according to claim 1,
wherein
a reflection layer is formed on each of said
support members at the side facing said pillar-shaped
members.

15 7. The optical device according to claim 1,
wherein
at least one of said pair of support members is
fixed to a piezoelectric element and said means for
20 applying mechanical force comprises electrodes
arranged on the piezoelectric element and a circuit
for applying a voltage to the electrodes.

8. A method of modulating an optical
25 characteristic of an optical element formed by using
a plurality of pillar-shaped members arranged
periodically and a pair of support members arranged

perpendicularly relative to the direction of
arrangement of the pillar-shaped members so as to
sandwich the pillar-shaped members, said optical
element showing a periodic structure of periodic
5 distribution of refractive indexes, wherein the
optical characteristic is modulated by applying force
to the optical element in a direction perpendicular
to the direction of arrangement of the pillar-shaped
members and changing the diameter of the pillar-
10 shaped members.